

Give renewable energy a chance

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Decentralised renewable energy can be made to work for rural areas.

On India's 65th Independence Day, Prime Minister Manmohan Singh made a promise to the people that every house in every village will be electrified in five years. Despite several such announcements in the past, the ultimate goal of complete electrification eludes us, though the Union Government has achieved significant success in rural electrification primarily through its Rajiv Gandhi Grameen Vidyutikaran Yojana.

Efforts are also being made to generate and distribute electricity to remote rural areas (where the grid supply hasn't reached or is severely restricted) through small-scale energy generation systems in an off-grid mode using locally available renewable resources such as

biomass, water, sunlight and wind. Such rural electricity access based on decentralised renewable energy (DRE) can bolster socio-economic development and alleviate poverty.

Sadly though, a number of commissioned DRE projects have failed to survive in the long run due to unresolved technical, socio-economic and institutional problems. The sustainable development of the DRE sector is hampered particularly by the high and inequitable tariffs for poor consumers, a lack of performance-based incentives and the perceived threat from the expanding centralised grid at the DRE project location. This article explains these concerns and offers suggestions.

Equitable Tariffs

DRE is primarily used by the rural poor, but they are often required to pay higher electricity tariffs than those paid by consumers connected to the grid. DRE systems are thus unattractive for poor households, which have no choice but to restrict their electricity usage. The prohibitive tariffs result from the high costs of electricity generation, caused in turn by the high specific capital costs, high operation and maintenance expenses and low utilisation factors in remote rural areas. Yet, there is no policy-regulatory mechanism to ensure that the tariffs of DRE and grid-connected consumers are equitable. Recently, the Forum of Regulators (FoR), which comprises chairpersons of the Central and State Electricity Regulatory Commissions (ERCs), has taken welcome steps in this regard.

The Forum has approved two business models which will ensure that DRE consumer tariffs are in line with their grid counterparts, and yet provide sufficient returns on investments to developers. According to one model, the developer shall provide electricity to consumers and collect revenue (consumer tariffs). An electricity distribution company will then provide the difference, that is, the viability gap for a kilowatt-hour between the generation tariff (also known as feed-in-tariff, decided by the State ERC) and the consumer tariff to the developer. The Forum's guidelines for this model are likely to be released soon. According to the second model, the developer shall provide electricity to consumers at grid-based tariffs and obtain a renewable energy certificate (REC) for the energy generated, which can then be exchanged on specially approved power exchanges. The Forum has requested the Central Electricity Regulatory Commission (CERC) to amend its REC regulations to enable RECs for off-grid projects.

Based on Performance

In view of the burden of high capital investments in setting up DRE projects, the Ministry of New and Renewable Energy (MNRE), the nodal Union ministry for the promotion of renewable energy, provides capital subsidies to developers through various schemes. Similarly, various funding agencies also offer grants for starting projects. While capital grants are helpful to kickstart any new initiative, the lack of focus on long-term performance remains unaddressed by such grants. Hence, performance-based incentives in the DRE sector must be promoted for giving incentives for higher generation. Such incentives demand an effective institutional and governance framework for the sustainable operation of the project. The effectiveness of this framework in making the DRE sector successful will pivotally depend on a robust process of monitoring and verification (M&V). Comprehensive M&V should focus on technical aspects (energy metering and conformity with standards), operational requirements (validation of protocols, subsidy disbursement and safety) and socio-economic measures (impact assessment and user feedback). Since DRE systems are widely dispersed in remote areas, the costs of M&V rise. Simple, streamlined procedures to reduce transaction costs to an acceptable level can be part of the solution. Additionally, all those who have a stake in DRE systems, including villagers, developers, distribution companies, State nodal agencies and State ERCs, must endeavour towards coordination among them for effective M&V.

Grid expansion

Given that the current drive to extend the grid through the Yojana poses a challenge to DRE projects, the sector should also have an eye on the future. Since one can expect most remaining unelectrified villages to be connected to the grid soon, it is believed that the arrival of the centralised grid would potentially threaten the existence of DRE projects, because the villagers will prefer the 'cheaper' grid electricity to the costlier electricity from DRE generation.

Nevertheless, integrating an off-grid DRE project to the centralised grid has its own advantages. As the centralised grid acts like a large battery, feeding electricity into the grid will lower the costs of DRE projects by improving their utilisation factors. Hence, it is crucial that all existing and new DRE projects possess the ability to integrate with the centralised grid and feed in surplus electricity into it, import

during higher demand, or isolate and supply the micro-grid when the main grid is down. At the same time, sustainable and scalable deployment of grid-connected DRE projects will also require a comprehensive framework encompassing several techno-economic and policy-regulatory factors, including grid-connectivity standards, tariffs, safety, regulations, metering and finance.

The DRE sector in India has the capacity to complement the Government's efforts towards household electrification. To achieve this end, it must make access to electricity affordable and sustainable for the rural poor.

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